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| APPLICATION NO.                     | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/768,944                          | 01/30/2004  | Muhammad Asif Khan   | SETI-0001DIV        | 8944             |
| 23550                               | 7590        | 11/14/2005           | EXAMINER            |                  |
| HOFFMAN WARNICK & D'ALESSANDRO, LLC |             |                      | ERDEM, FAZLI        |                  |
| 75 STATE STREET                     |             |                      | ART UNIT            |                  |
| 14TH FL                             |             |                      | PAPER NUMBER        |                  |
| ALBANY, NY 12207                    |             |                      | 2826                |                  |

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/768,944

Applicant(s)

KHAN ET AL.

Examiner

Fazli Erdem

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 20-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20, 21, 24, 25 and 28-30 is/are rejected.
- 7) ☒ Claim(s) 22, 23, 26 and 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Final rejection issued on 8/24/2005 has been withdrawn. However, after further search and consideration this non-final rejection has been issued.

### ***Allowable Subject Matter***

1. Claims 22, 23, 26 and 27 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
2. The following is a statement of reasons for the indication of allowable subject matter:  
Prior art failed to establish semiconductor device with the required molar percentage of Al and In.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:  
  
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. Claims 20 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Edmond et al. (5,523,589) in view of Dawson et al. (6,563,141).

Regarding Claims 20 and 21, Edmond et al. disclose a vertical geometry light emitting diode with group III nitrid active layer and extended lifetime where in Fig. 1, it is disclosed a SiC (silicon carbide) substrate 21, a buffer which is nitride based and can

include In (Indium) 23 on substrate, and another nitride based layer 27 which can include a quaternary layer. Edmond et al. fail to disclose the required substrate and the required quaternary layer. However, Dawson et al. disclose optical devices where in Figs 1a-1c the substrate 12 is SiC/sapphire and multilevel quaternary layer 15 is InAlGaN.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required substrate and the required quaternary layer in Edmond et al. as taught by Dawson et al. in order to have a semiconductor device with increased performance.

5. Claims 24, 25, 28, 29 and 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Edmond et al. (5,523,589) in view of Dawson et al. (6,563,141) further in view of Sasanuma et al. (JP411243251)

Regarding Claims 24,25, 28, 29 and 30, Edmond et al. disclose a vertical geometry light emitting diode with group III nitride active layer and extended lifetime where in Fig. 1, it is disclosed a SiC (silicon carbide) substrate 21, a buffer which is nitride based and can include In (Indium) 23 on substrate, and another nitride based layer 27 which can include a quaternary layer. Edmond et al. fail to disclose the required substrate, the required quaternary layer and the required multilevel quaternary layer. However, Dawson et al. disclose optical devices where in Figs 1a-1c the substrate 12 is SiC/sapphire and multilevel quaternary layer 15 is InAlGaN. Furthermore, Sasanuma et al. disclose a semiconductor laser where in Fig. 6, the required InGaN/InGaAlN, multilayer quaternary structure is disclosed.

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It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required substrate and the required quaternary layer and the required multilayer quaternary structure in Edmond et al. as taught by Dawson et al. and Sasanuma et al. respectively, in order to have a semiconductor device with increased performance.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (571) 272-1914. The examiner can normally be reached on M - F 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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FE  
November 2, 2005